Exemption No. 6178

UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
RENTON, WASHINGTON 98055-4056

In the matter of the petition of

Flight Structures, Inc.,

for an exemption from §§ 25.785(d), 25.813(b), 25.857(e), and 25.1447(c)(1) & (c)(3)(ii) of the Federal Aviation Regulations

Regulatory Docket No. 28257

GRANT OF EXEMPTION

By letter, dated June 14, 1995, Mr. Terry Millard, Certification Manager, Flight Structures, Inc., 4407 172nd Street NE, Arlington, WA 98223, petitioned for an exemption from the requirements of §§ 25.785(d), 25.813(b), 25.857(e), and 25.1447(c)(1) & (c)(3)(ii) for a passenger to freighter conversion of an Airbus Model A300-B4-203 airplane, to allow the carriage of up to five supernumeraries on the main deck in addition to a maximum of three flight deck occupants, for a total occupancy of eight.

Sections of the FAR affected:

Section 25.785(d) at Amendment 25-32 requires, in pertinent part, that there be a firm handhold to enable occupants to steady themselves when using the aisles in moderately rough air.

Section 25.813(b) at Amendment 25-32 requires, in pertinent part, that each passenger emergency floor level exit equipped with an assist means have an assist space next to it.

Section 25.857(e) at Amendment 25-32 requires, in pertinent part, that when a Class E cargo compartment is installed on the airplane, the airplane is used for carriage of cargo only.

Section 25.1447(c)(1) at Amendment 25-41 requires, in pertinent part, that oxygen masks be automatically presented to each seated occupant, with manual backup, and that there be ten percent more oxygen masks than occupants.

Section 25.1447(c)(3)(ii) at Amendment 25-41 requires two oxygen masks, similar to those required above, in each lavatory.

Related Sections of the FAR

Section 121.583(a) contains a listing of categories of the people who may be carried aboard an airplane in part 121 service without complying with all the passenger-carrying airplane requirements of part 121.

The petitioner's supportive information is as follows:

In support of our project for a passenger to cargo conversion of an Airbus A300-B4-203 airplane, administered under FAA Supplemental Type Certificate (STC) project ST1384SE-T, Flight Structures, Inc., hereafter designated as 'FSI,' hereby petitions for exemption from the following Federal Aviation Regulations: Sections 25.857(e), 25.785(d), 25.813(b), 25.1447(c)(1), and 25.1447(c)(3)(ii), and to allow for the carriage on the main deck of up to five non-crewmembers (persons not necessarily assigned some duty associated with the operation of the airplane and commonly referred to as supernumeraries) in addition to the maximum of three flight deck crew, with a limit on the total occupancy of eight. It is proposed that the exemption be effective from October 16, 1995, to support the STC project.

BRIEF DESCRIPTION OF THE GENERAL NATURE OF THE RELIEF REQUESTED:

The A300-B4-203 is a pressurized, transport category airplane powered by two turbofan engines, and is included on the United States (U.S.) Type Certificate No. A35EU, first issued May 30, 1974. The A300-B4-203 passenger airplane is being converted to an all-freighter airplane, having an all-cargo main deck configuration.

In order to optimize the cargo missions, accommodation for four (sic) persons is provided between the flight deck and the main deck Class E cargo compartment, in the direct vicinity of the exits. Except for the sections from which exemption is requested, all design criteria applicable to the carriage of passengers have been taken into account for the design of this seating arrangement. In particular, protection against crash and penetration of smoke and noxious gases is provided in the form of a 9g crash net and smoke-tight curtains, which isolate the main deck cargo compartment from the zone where the supernumeraries are seated. Two

emergency exits identical to the ones installed and qualified as Type A on the passenger version are located on each side of the fuselage, both equipped with escape slides. Oxygen supply in case of depressurization (as required in case of smoke warning in the main deck cargo compartment) is ensured by oxygen bottles, which can supply oxygen for all the airplane occupants for the maximum possible duration. The occupants are instructed that oxygen masks need to be used by an aural/visual warning.

NATURE AND EXTENT OF THE RELIEF SOUGHT:

The main purpose of this request for exemption is to permit the carriage of noncrewmembers on the all-freighter airplane by requesting exemption from § 25.857(e). Exemption to the other sections are secondary.

Exemption from the above sections is sought to the following extent:

Section 25.785(d): No handgrips are installed.

Section 25.813(b): No assist space is provided adjacent to the emergency exits.

Section 25.1447(c)(1): One oxygen dispensing unit is supplied and readily available for every seated occupant. The occupants will take hold of the mask upon instruction via aural/visual warning controlled by the flightcrew. Oxygen units will not be automatically presented, and there will not be ten percent more oxygen masks than occupants.

Section 25.1447(c)(3)(ii): One oxygen mask in installed in the lavatory.

SUPPORTING ARGUMENTS INCLUDING EQUIVALENT SAFETY:

The cargo operators need for their missions a number of support personnel, necessary for the safe handling of the cargo in the process of loading/off-loading. Such personnel are needed both at departure and arrival of a cargo flight. It is particularly important that the cargo handlers are present upon airplane arrival if perishable goods or live animals are carried. The most efficient, surest, and cheapest way to assure their attendance at the destination airport is to transport them aboard the cargo flight.

Among their various missions, the cargo operators may have to carry particular kinds of goods, such as live animals, hazardous materials, or valuable or perishable cargo. Such types of cargo often require attention during flight, and the presence of personnel qualified in their handling is necessary on the airplane on which they are carried. Safety and efficiency of the operation will therefore be enhanced.

Cargo operators also need to have qualified personnel necessary for operation and maintenance purposes at various locations. They will optimize their missions if they are permitted to carry their personnel aboard their cargo flights, thus saving travel by regular passenger flights.

The FAR addresses the carriage aboard commercial flights of crewmembers, including flight crewmembers and cabin attendants, who are each assigned duties associated with the operation of the airplane, and passengers, who have no expected ability in the use of emergency provisions and therefore need to be attended. The categories of occupants for which this exemption is sought are required to receive special training.

The assist space adjacent to the emergency exits required by § 25.813(b) for assisting passengers in evacuating is not necessary, as the proposed categories of personnel will be trained for door operation and autonomous evacuation. Both doors are equipped with self-deploying slides.

Likewise, the requirements of §§ 25.1447(c)(1) and (c)(3)(ii) for automatic presentation of oxygen dispensing units before the cabin pressure altitude exceeds 15,000 ft. are compensated by the fact that the users will have knowledge of equipment location and use. The masks provided are quick-donning masks with regulator, and are immediately available to seated occupants. A similar procedure for reach and use of dispensing units applies to flight crewmembers.

As far as the excess ten percent dispensing units required by § 25.1447(c)(1) are concerned, they are mainly required for two purposes: for use by cabin attendants moving along the aisles, and to improve the probability that each passenger will easily be able to reach one mask. Neither of these factors applies to the proposed configuration.

The requirements of § 25.785(d) to have handgrips installed when seatbacks do not allow a firm handhold cannot be met. Such grips are mainly intended for the use of cabin attendants who need to frequently walk along the aisles. Occupants will be instructed to remain seated with seat belt fastened as far as practical. There should be limited movement of occupants during turbulence.

A similar exemption has previously been granted for an A300-F4-600R freighter.

PUBLIC INTEREST:

By carrying supernumeraries aboard their cargo flights, U.S. operators of Airbus A300-B4-203 freighter airplanes will be able to operate under optimal safety conditions by unburdening flightcrew, rendering their operation more efficient, and realizing substantial savings in carrying their personnel from one place to another. This will also improve the utility of cargo airplanes.

A summary of Flight Structures' petition was published in the Federal Register on August 22, 1995 (60 FR 43643) No comments were received.

The FAA's analysis/summary is as follows:

Part 25 aircraft certification regulations do not address occupants other than crew and passengers. Accordingly, the FAA has previously granted petitions for exemption to allow the carriage of persons in addition to flightcrew on freighter airplanes, provided certain conditions were met. Those conditions have varied, depending on the airplane design, the nature of the proposals under consideration, and the number of persons involved.

Flight Structures has requested relief from the requirements of § 25.857(e), which permit carriage of only cargo when a Class E cargo compartment is installed on the airplane. Class E cargo compartments are usually remote from the flight deck and encompass the entire interior of the airplane. Fires that might occur in this type of cargo compartment are controlled by starving the fire of oxygen. This is accomplished by depressurizing the airplane and maintaining a cabin altitude that will not support combustion. For this reason, only crewmembers occupying the flight deck are normally permitted on board such airplanes.

A major concern in permitting occupancy by non-crewmembers outside the flight deck on such airplanes is in assuring that there is a suitable means for preventing smoke penetration into this occupied area. Another concern is that the persons allowed on board the airplane are limited to those that are briefed on emergency equipment and procedures and are found by the operator to be both physically fit and willing to use the emergency equipment and means of emergency egress provided. Flight Structures' design satisfies these concerns by providing a smoke curtain, and proposing appropriate limitations on the occupants.

A major positive feature of Flight Structures' proposal is the retention of the forward passenger doors and inflatable escape slides to facilitate emergency egress. These doors are much larger than the Type III exits that would be required for this number of occupants. The FAA considers that an assist space is not necessary in this case due to the higher level of training and awareness of the occupants.

The petitioner is incorrect in stating that handholds are mainly intended for the use of cabin attendants. Handholds are to assure that all occupants have a means to steady themselves in moderately rough air while traversing the main aisles of typical passenger airplanes. On the proposed airplane, the occupied area is very small, with no aisles and nowhere to go, and it is possible to return to each seat very quickly. Therefore, the FAA concurs with the petitioner that it is not necessary to provide dedicated handholds beyond those that may be already incidentally available.

The FAA considers that supernumeraries should have a supplemental oxygen system that is comparable to the automatically presented mask system that is required for passengers.

However, taking into account the extra knowledge and training that supernumeraries will have, it is not considered necessary that an equivalent system be provided. Flight Structures' proposal provides for masks that are installed in a readily accessible location visible to all occupants, and that are of the quick-donning variety, which requires only a single motion to unstow and don. A signal to don masks is proposed to be by audio/visual means (the evaluation of this system for acceptability should include a determination that the chime or other dedicated aural means is sufficiently loud to awaken occupants during expected ambient noise levels). This signal is initiated automatically prior to the cabin altitude reaching 15,000 ft., with manual backup capability from the cockpit. Since the supernumeraries will be briefed on the location and donning procedures of these masks and the signals to require their use, the difference of this system from automatically presented masks provided to passengers in accordance with the requirements of § 25.1447(c)(1) is considered acceptable. In addition, the FAA concurs with the petitioner's proposal that the requirements of § 25.1447(c)(1) for ten percent more masks than occupants is unnecessary and inappropriate in this case. However, in response to the petitioner's incorrect assertion that the ten percent overage requirement is based, in part, on "passenger's awkwardness to reach one mask," this requirement is, in fact, intended to provide for flight attendant usage while traversing the aisle and to accommodate infants held in laps.

For the lavatory, the petitioner proposes the installation of one mask in lieu of the two masks required by § 25.1447(c)(3)(ii), but no arguments are offered in support of this proposal. The FAA nevertheless believes that an exemption from the two-mask requirement is warranted, because neither flight attendant assistance nor parent-child occupancy of the lavatory would occur on this airplane. Since the petitioner does not address any further aspect of the lavatory oxygen system, the FAA assumes and expects that the single mask that Flight Structures provides shall be an automatically presented mask as required, and is not a subject of this exemption.

In consideration of the foregoing, I find that a grant of exemption is in the public interest and will not affect the level of safety provided by the regulations. Therefore, pursuant to the authority contained in 49 USC 40113 and 44701, delegated to me by the Administrator (14 CFR 11.53), Flight Structures, Inc., is hereby granted an exemption from §§ 25.785(d), 25.813(b), 25.857(e), and 25.1447(c)(1) & (c)(3)(ii) of the Federal Aviation Regulations. The petition is granted to the extent required to permit supplemental type certification of an Airbus Model A300-B4-203 passenger-to-freighter airplane conversion, with provisions for the carriage of persons other than flight crewmembers when the airplane is equipped with two floor-level exits with escape slides, within the occupied main deck area. The following limitations apply:

1. The airplane flight manual must contain a limitation that occupancy outside of the flight deck is restricted to a maximum of five persons;

2. Occupants are limited to the categories specified in §§ 121.583(a)(1) through (7);

3. Each occupant must be briefed by a flight crewmember on the use of the exits and emergency equipment prior to each flight; and

4. The operator must determine that each occupant is physically able to accomplish the necessary emergency procedures.

Issued in Renton, Washington, on October 5, 1995

Gary L.Killion
Acting Manager
Transport Airplane Directorate,
Aircraft Certification Service, ANM-100